

ABSTRACT

An object of the present invention is to provide a plasma etching method by which both of a requirement for a trench shape
5 and a requirement for a aspect ratio can be satisfied, and a trench having a side wall of a smooth shape can be formed. According to the present invention, a silicon substrate is placed on a lower electrode, etching gas is supplied through a gas introducing port and exhausted from an exhaust port, high frequency power supplies
10 supply high-frequency electricity to an upper electrode and a lower electrode, respectively, in order to energize the etching gas into plasma state, using an ICP method, and then activated species are generated to etch of the silicon substrate. As the etching gas, a mixed gas, which includes mainly SF_6 gas added with O_2 gas and He
15 gas, is used.